

CHAPTER 25
IOWA ELECTRICAL SAFETY CODE
[Prior to 10/8/86, Commerce Commission[250]]

199—25.1(476,476A,478) General.

25.1(1) Purpose and intent. The rules apply to electric and communication utility facilities located in the state of Iowa and shall supersede all conflicting rules of any such utility.

These rules are intended to promote safe and adequate service to the public, to provide standards for uniform and reasonable practices by utilities, and to establish a basis for determining the reasonableness of such demands as may be made by the public upon the utilities.

This rule shall in no way relieve any utility from any of its duties under the laws of this state.

25.1(2) Reserved.

199—25.2(476,476A,478) Iowa electrical safety code defined. The standard minimum requirements for the installation and maintenance of electric substations, generating stations, and overhead and underground electric supply or communications lines adopted below, collectively constitute the “Iowa Electrical Safety Code.”

25.2(1) National Electrical Safety Code. The American National Standards Institute (ANSI) C2-2002 “National Electrical Safety Code” (NESC) as ultimately conformed to the ANSI-approved draft by correction of publishing errors through issuance of printed corrections is adopted as part of the Iowa electrical safety code, except Part 4, “Rules for Operation of Electric Supply and Communications Lines and Equipment,” which is not adopted by the board.

25.2(2) Modifications and qualifications to ANSI C2. The standards set forth in ANSI C2 are modified or qualified as follows:

a. Introduction to the National Electrical Safety Code.

(1) The following paragraph is added to NESC 011: “The National Electrical Safety Code (NESC) covers utility facilities and functions from the point of generation by the utility, or delivery from another entity, of electricity or communications signals through the utility system to the point of delivery to a customer’s facilities.”

(2) NESC 013A2 is modified to read as follows: “Types of construction and methods of installation other than those specified in the rules may be used experimentally to obtain information, if done where qualified supervision is provided and prior approval is obtained from the board.”

b. Minimum clearances.

(1) In any instance where minimum clearances are provided in Iowa Code chapter 478 which are greater than otherwise required by these rules, the statutory clearances shall prevail.

(2) The following clearances shall apply to all lines regardless of date of construction: NESC 232, vertical clearances for “Water areas not suitable for sailboating or where sailboating is prohibited,” “Water areas suitable for sailboating. . .,” and “Public or private land and water areas posted for rigging and launching sailboats”; and NESC 234E, “Clearance of Wires, Conductors, or Cables Installed Over or Near Swimming Areas With No Wind Displacement.”

(3) Table 232-1, Footnote 19, is changed to read: “Where the U.S. Army Corps of Engineers or the state, or a surrogate thereof, issues a crossing permit, the clearances of that permit shall govern if equal to or greater than those required herein. Where the permit clearances are less than those required herein and water surface use restrictions on vessel heights are enforced, the permit clearances may be used.”

(4) Except for clearances near grain bins, for measurements made under field conditions, the board will consider compliance with the overhead vertical line clearance requirements of Subsection 232 and Table 232-1 of the 1987 NESC indicative of compliance with the 1997 NESC. (For an explanation of the differences between 1987 and subsequent code edition clearances, see Appendix A of the 1997 NESC.)

c. Rescinded IAB 8/5/92, effective 9/9/92.

d. Rule 264E.1 is changed to read:

"The ground end of anchor guys exposed to pedestrian or vehicle traffic shall be provided with a substantial marker not less than eight feet long. The guy marker shall be of a conspicuous color such as yellow, orange, or red. Green, white, gray or galvanized steel colors are not reliably conspicuous against plant growth, snow, or other surroundings. Noncomplying guy markers shall be replaced as part of the utility's inspection and maintenance plan."

e. There is added to Rule 381G:

(3) Pad-mounted equipment not located within a fenced or otherwise protected area shall have affixed to its outside access door or cover a prominent "Caution" or other appropriate warning sign of highly visible color, warning of hazardous voltage and including the name of the utility. These signs shall be in place on or before December 31, 1992.

f. There is added to the first paragraph of Rule 110.A.1, after the sentence stating, "Entrances not under observation of an authorized attendant shall be kept locked," the following sentence:

Entrances may be unlocked while authorized personnel are inside. However, if unlocked, the entrance gate must be fully closed, and must also be latched or fastened if there is a gate-latching mechanism.

25.2(3) Grain bins.

a. Utilities shall conduct annual public information campaigns to inform farmers, farm lenders, grain bin merchants, and city and county zoning officials of the hazards of and standards for construction of grain bins near power lines.

b. An electric utility may refuse to provide electric service to any grain bin built near an existing electric line which does not provide the clearances required by The American National Standards Institute (ANSI)C2-1997 "National Electrical Safety Code," Rule 234F. This paragraph "b" shall apply only to grain bins loaded by portable augers, conveyors or elevators and built after September 9, 1992, or to grain bins loaded by permanently installed augers, conveyors, or elevator systems installed after December 24, 1997.

25.2(4) General rules for operation, coordination and cooperation. Aerial electric supply lines and aerial communication lines shall utilize joint construction whenever feasible and advantageous to each party unless inductive effects prevent safe adequate communication service. The means of avoiding or reducing inductive effects such as are outlined below shall be applied in each case insofar as is practical for the sufficient reduction of inductive interference. In the event that the parties of interest fail to agree upon the application of these means to a specific case, the matter shall be referred to the board for determination.

a. *Location of electric supply lines.* Electric supply lines and communication lines may be required to be located on opposite sides of the highway and separated as far as practical within highway limits. When electric supply and communication lines are located on private rights-of-way, the horizontal separation shall, if practical, be of such distance that no structure conflict will be created. In the event it is not practical to obtain such a separation when these lines are on private rights-of-way and the parties involved can reach an agreement with regard to the conflict or joint use of poles, no further action is necessary. In the event no agreement can be reached, the matter shall be referred to the board for determination.

Electric utilities shall furnish pertinent data regarding new construction and major improvements of electric supply lines to communication utilities operating communication lines involved in crossings, conflicts and inductive exposures.

Crossings from side to side of a highway should be avoided as far as practical.

b. *Location of communication lines.* Communication utilities shall furnish pertinent data regarding new construction and major improvements of communication lines to utilities operating electric supply lines involved in crossings, conflicts and inductive exposures.

In the absence of a joint occupancy agreement, communication lines shall be constructed on one side of the highway so that the other side of the highway may be used by electric supply lines.

Crossings from side to side of a highway should be avoided as far as practical.

c. *Lines.* In order to limit the residual currents and voltages arising from line unbalances, the resistance, inductance, capacitance and leakage conductance of each phase conductor of an electric supply circuit in any section shall be as nearly equal as practical to the corresponding quantities in the other phase conductors in the same section.

The ampacity of a multigrounded neutral conductor of an electric supply circuit shall be adequate for the load which it is required to carry. The ampacity of a multigrounded neutral conductor of an electric supply circuit shall not be less than 60 percent of that of any phase conductor with which it is associated, except for three phase four wire wye circuits where it shall have ampacity not less than 50 percent of that of any associated phase conductor. In no case shall the resistance of a multigrounded neutral conductor exceed 3.6 ohms per mile. (This does not modify the mechanical strength requirements for conductors.) A multigrounded conductor installed and utilized primarily for lightning shielding of the associated phase conductors need not comply with the above percentage ampacity requirements for neutral conductors.

Where the neutral conductor of the electrical supply circuit is not multigrounded or in an inductive exposure involving communication or signal circuits and equipment where the controlling frequencies are 360 Hertz or lower, any neutral conductor shall have the same ampacity as the phase conductors with which it is associated.

25.2(5) Other references adopted.

a. The "National Electrical Code," ANSI/NFPA 70-2002, is adopted as a standard of accepted good practice for customer-owned electrical facilities beyond the utility point of delivery.

b. "The Lineman's and Cableman's Handbook," Ninth Edition; Kurtz, Edwin B. and Shoemaker, Thomas M.; New York, McGraw-Hill Book Co., is adopted as a recommended guideline to implement the "National Electrical Safety Code" or "National Electrical Code," and for developing the inspection and maintenance plans required by 199 IAC 25.3(476,478).

199—25.3(476,478) Inspection and maintenance plans.

25.3(1) Filing of plan. Each electric utility shall adopt and file with the board a written program for inspecting and maintaining its electric supply lines and substations (excluding generating stations) in order to determine the necessity for replacement, maintenance and repair, and for tree trimming or other vegetation management. If the plan is amended or altered, revised copies of the appropriate plan pages shall be filed.

25.3(2) Annual report. Each utility shall include as part of its annual report to the board, as required by 199—Chapter 23, certification of compliance with each area of the inspection plan or a detailed statement on areas of noncompliance.

25.3(3) Contents of plan. The inspection plan shall include the following elements:

a. *General.* A listing of all counties or parts of counties in which the utility has electric supply lines in Iowa. If the utility has district or regional offices responsible for implementation of a portion of the plan, the addresses of those offices and a description of the territory for which they are responsible shall also be included.

b. *Inspection of lines, poles, and substations.*

(1) *Inspection schedules.* The plan shall contain a schedule for the periodic inspection of the various units of the utility's electric plant. The period between inspections shall be based on accepted good practice in the industry, but for lines and substations shall not exceed ten years for any given line or piece of equipment. Lines operated at 34.5 kV or above shall be inspected at least annually for damage and to determine the condition of the overhead line insulators.

(2) Inspection coverage. The plan shall provide for the inspection of all supply line and substation units within the adopted inspection periods and shall include a complete listing of all categories of items to be checked during an inspection.

(3) Conduct of inspections. Inspections shall be conducted in a manner conducive to the identification of safety, maintenance, and reliability concerns or needs.

(4) Instructions to inspectors. Copies of instructions or guide materials used by utility inspectors in determining whether a facility is in acceptable condition or in need of corrective action or further investigation.

c. Tree trimming or vegetation management plan.

(1) Schedule. The plan shall contain a schedule for periodic tree trimming or other measures to control vegetation growth under or along the various units of the utility's electric plant. The period between inspections shall be based on accepted good practice in the industry and may vary depending on the nature of the vegetation at different locations.

(2) Procedures. The plan shall include written procedures for vegetation management. The procedures shall promote the safety and reliability of electric lines and facilities. Where tree trimming is employed, practices shall be adopted that will protect the health of the tree and reduce undesirable re-growth patterns.

25.3(4) Records. Each utility shall keep sufficient records to demonstrate compliance with its inspection and vegetation management programs. For each inspection unit, the records of line, pole, and substation inspections shall include the inspection date(s), the findings of the inspection, and the disposition or scheduling of repairs or maintenance found necessary during the inspection. For each inspection unit, the records of vegetation management shall include the date(s) during which the work was conducted. The record shall be kept until two years after the next periodic inspection or vegetation management action is completed or until all necessary repairs or maintenance are completed, whichever is longer.

25.3(5) Guidelines. Applicable portions of Rural Electrification Bulletins 161-3, 1730B-121, and 165-1 and "The Lineman's and Cableman's Handbook" are suggested as guidelines for the development and implementation of an inspection plan. ANSI A300 (Part 1)-2001, "Pruning," and Section 35 of "The Lineman's and Cableman's Handbook" are suggested as guides for tree trimming practices.

199—25.4(476,478) Correction of problems found during inspections. Corrective action shall be taken within a reasonable period of time on all potentially hazardous conditions, instances of safety code noncompliance, maintenance needs, potential threats to safety and reliability, or other concerns identified during inspections. Hazardous conditions shall be corrected promptly.

199—25.5(476,478) Accident reports. A utility shall file with the board a written report on any accident to an employee or other person involving contact with its energized electrical supply facilities which results in a fatality, admission to a hospital, \$10,000 in damages to the property of the utility and others, or any other accident considered significant by the utility. Prompt telephone notice of any electrical contact accident which results in a fatality shall be given to the board's engineering section during normal working hours. Written reports shall be submitted as soon as is practical following the accident.

Written and telephone accident reports shall include the following information:

- The name of the utility, the name of the person making the report, and their telephone number.
- The time and location of the accident.
- The number of fatalities, extent of personal injuries, and the extent of property damage.
- A description of the events associated with the accident.

These rules are intended to implement Iowa Code chapter 478.

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CHAPTER 26

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CHAPTER 27

IOWA-SAVE AMERICA'S VITAL ENERGY

Rescinded IAB 5/13/92, effective 6/17/92

◊ Two ARCs